

## **REMARKS**

Claims 1, 5 and 16 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added.

### **35 U.S.C. §112, First Paragraph Rejections**

Claims 11 and 19 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Specifically, claims 11 and 19 recite “the ferroelectric members constituting the core layer are oriented in such a manner that directions of one of the (001), (110) and (111) planes of the ferroelectric members are uniform”. The Examiner asserts that these (001), (110) and (111) planes are introduced in applicant paragraph [0120], but are not defined. The Examiner indicates that correction is required.

The planes (001), (110) and (111) are introduced on page 25 lines 7-9 of the specification. This passage of the specification recites,

“In the first to seventh embodiments described above, it is preferable to orient the photonic crystals of the ferroelectric columns 4 in such a manner that the directions of one of the (001), (110) and (111) planes are uniform. The directions of the crystal plane can be aligned by growing the ferroelectric columns 4 in such a manner that the crystal plane is made parallel to the substrate surface.”

Planes (001), (110) and (111) indicate the orientations of crystal planes, which are expressed by Miller indices. Such expression is generally used in the crystallographic field. Copies of Charles Kittel’s text entitled “Introduction to Solid State Physics” describing the Miller indices are attached herewith in order to evince that the expression is generally used in the crystallographic field.

Applicants believe that the expression “(001), (110) and (111) planes” is not unclear. Therefore, withdrawal of the rejection of Claims 11 and 19 under 35 U.S.C. §112, first paragraph, is

respectfully requested.

### **35 U.S.C. §102(b) Rejections**

Claims 1-4 and 16-20 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jasper et al. (U.S. 5,739,796).

The present invention is an optical function device. As illustrated in the first embodiment shown in Figure 1 this optical function device is made of a substrate layer (1) on which is placed a lower electrode (2). On the lower electrode layer (2) is placed a lower clad layer (3) and then a core layer (10). The core layer (10) is made of columns (4) and a filler (5). On the core layer (10) is placed an upper clad layer (6) and thereafter an upper electrode (7).

Jasper et al. describes a photonic band gap crystal. As illustrated in Figure 3 the crystal has a number of equal length dielectric rods (2) which are disposed within a host material (11).

Claims 1 and 16 have been amended to include the feature that “a clad layer disposed on both sides of the core layer containing photonic crystals formed by ferroelectric members made of a ferroelectric substance and periodically disposed along a one-dimensional direction or two-dimensional directions”. The prior art of record fails to disclose this feature. Thus, Claims 1 and 16 as amended are believed to overcome this rejection. Therefore, withdrawal of the rejection of Claims 1-4 and 16-20 under 35 U.S.C. §102(b) as being anticipated by Jasper et al. (U.S. 5,739,796) is respectfully requested.

### **Allowable Subject Matter**

Claims 5-10 were objected to as being dependent upon a rejected base claim, but would be

U.S. Patent Application Serial No. 10/804,061  
Reply to OA dated November 30, 2004

allowable if rewritten in independent form. Claim 5 has been rewritten in independent form and claim 5, and the claims dependent thereon, are believed to be patentable. Therefore, allowance of claims 5-10 is respectfully requested.

### **Conclusion**

In view of the aforementioned amendments and accompanying remarks, claims 1-25, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. **10/804,061**  
Reply to OA dated November 30, 2004

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,  
HANSON & BROOKS, LLP



George N. Stevens  
Attorney for Applicant  
Reg. No. 36,938

GNS/nrp  
Atty. Docket No. **040141**  
Suite 1000  
1725 K Street, N.W.  
Washington, D.C. 20006  
(202) 659-2930



**23850**

PATENT TRADEMARK OFFICE

H:\HOME\GSTEVEN\04\040141\Amendment